THE TRUE STORY OF DRM

by

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Digital rights management systems (commonly abbreviated and further referred as "DRM") were introduced in 1994 as a technological tool for control of accessing and handling the digital content. Since then, DRM have been a very controversial topic and the story of implementing DRM has been full of turns and twists. In the beginning DRM were seen as a panacea to the problem of illegal sharing of copyrighted works. However, the unsatisfied users rapidly cracked the DRM protection and consequently another layer of protection, namely from law banning such behavior was needed.

The aim of this paper is to present the corresponding response of lawmakers on the international and European level. It should also provide a comprehensive overview of the milestones in the development of DRM.

Based on this legal and chronological summary, the crucial question, whether the DRM have failed and proven themselves as "defective by design" from the consumer's point of view should be answered. Lastly the future development in the area of DRM should be briefly sketched out.

KEYWORDS
Digital Rights Management, digital copyright

1. WHY DIGITAL RIGHTS MANAGEMENT?

1.1. TECHNOLOGICAL PROTECTION OF COPYRIGHT

Digitalization and the ability to disseminate copyrighted works rapidly via the Internet without any significant quality loss brought a drastic shift in the established business models in the relevant areas of market that is the copyright industries.[1] Because of the fact, that the Internet could be turned into an inexpensive and widespread distribution medium, the content interme-

[1] For the impact of digitalization on intellectual property in general see especially: Lessig, L. 2004, Free Culture: The Nature and Future of Creativity, Penguin Press, p. 125 et seq.

diaries (i.e. the publishers, distributors and recording companies) are becoming unnecessary.[2] However, they employ various strategies to retain their controlling position and protect their vested interest. Yu[3] refers to this state as the "Copyright Wars" and enumerates these particular strategies – lobbying,[4] litigation,[5] licensing,[6] education[7] and self-help.

This article focuses on the last practice. Self-help of the copyright industries could be described as a "the-answer-to-the-machine-is-in-the-machine"[8] approach and means the effort to restrain users from unauthorized usage of copyrighted digital content with the help of technological measures, i.e. digital rights management systems (DRM).

DRM are implemented mostly in the entertainment industry. Consequently, this article should discuss mainly issues in relation to these particular areas of digital music and movies, deliberately omitting the issues of broadcasting and software related DRM.

1.2. DRM DEFINITION

The DRM are employed of DRM on a wide range of digital or digitalization-able contents (e.g. VHS, DVDs, CDs, HD-DVDs, eBooks, music subscription services, online download services etc.) and pursue different objectives in every single application.

Therefore it is difficult to provide a clear and comprehensive definition of the term DRM that would cover all of its aspects. Also the DRM are a subject to constant and rapid development and due to this fact every definition of DRM gets outdated very quickly.

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[2] Lucchi calls this process simply disintermediation. In: Lucchi, N. 2005, 'Intellectual Property Rights in Digital Media: A Comparative Analysis of Legal Protection, Technological Measures and New Business Models under E.U. and U.S. Law', http://ssrn.com/abstract=704101 [Accessed 13 January 2009].

[3] Yu, K. P. 2006, 'The Escalating Copyright Wars', http://ssrn.com/abstract=436693,[Accessed 13 January 2009].

[4] See infra in [2].

[5] Recording industry represented by the relevant industry trade groups – mainly the Record Industry Association of America and Motion Picture Association of America (MPAA) engaged in massive campaign of suing individuals on allegations of copyright infringement. See: Kravets, D. 2008, 'File Sharing Lawsuits at a Crossroads, After 5 Years of RIAA Litigation' http://blog.wired.com/27bstroke6/2008/09/proving-file-sh.html [Accessed 13 January 2009].; Lately, RIAA declared to end this campaign, for details see: Kravets, D. 2008, 'Analysis: RIAA Strategy Shift Mired in Murky Legal Waters' http://blog.wired.com/27bstroke6/2008/12/analysis-riaa-s.html [Accessed 13 January 2009].

[6] Providing users with legal alternatives to illegal downloading like music subscription services, however this also did not turn out to be trouble-free, see infra [3.5].

[7] The effort to raise the awareness of the users about the fact, that downloading of pirated digital content is illegal. Example being the "You Wouldn't Steal a Car" campaign of MPAA from 2004 - this clip (available at http://www.youtube.com/watch?v=jg_yehioJX8) is put before the content on DVDs.

[8] As defined by Clark in: Clark, C. The answer to the machine is in the machine. p. 139-48. In: Hugenholtz, P. B. (ed.) The Future of Copyright in a Digital Environment, The Hague: Kluwer Law International, 1996, s. 139 et seq.

However, for the purpose of this article DRM may be understood as an overwhelming term for implementation of technology (both online and off-line) that allows the copyright holder to control the access and copying possibilities of the protected work, the identification, trading and management of related payment of such work.

1.3. DRM, TPM, RMI

Not only the definition of DRM is heterogeneous, also the terminology used in connection with DRM does not provide for clarity. Commonly are used terms like technological protection measures, copy-protection measures, access control systems or copy protection, copyright protection systems etc.

However, we can distinguish basically two elements of every DRM:

Technological protection measures (further referred as "TPM") defined in the Art. 6(3) of the INFOSOC Directive[9] as any technology, device or component that, in the normal course of its operation, is designed to prevent or restrict acts, in respect of works or other subject-matter, which are not authorized by the right holder of any copyright or any right related to copyright as provided for by law.

Rights management information (further referred as "RMI") legally defined as information which identifies the work, the author of the work, the owner of any right in the work, or information about the terms and conditions of use of the work, and any numbers or codes that represent such information, when any of these items of information is attached to a copy of a work or appears in connection with the communication of a work to the public.[10]

Technological protection measures and Rights management information jointed together fulfill the general definition of DRM, therefore DRM enjoy also the full protection of law.

2. LAW: ANOTHER LAYER OF PROTECTION

Almost every new DRM implementation has been compromised and hacked[11] and thus another layer of protection, apart from the technological, was needed. Consequently, the entertainment industry lobbied[12] to put the force of law behind the DRM and thus prohibit circumvention of TPM, removal of RMI and trading in circumvention tools. In the forthcoming text we should provide a simple overview of the related relevant legal measures taken in the field of DRM.

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[9] See infra in [2.2].

[10] Art. 12 WCT.

[11] See infra in [4].

[12] See for example: Hugehnholtz, B. 2000, 'Why the Copyright Directive is Unimportant, and Possibly Invalid', http://www.ivir.nl/publications/hugenholtz/opinion-EIPR.html [Accessed 13 January 2009].

2.1. THE WIPO INTERNET TREATIES

On the international level the basic lex lata documents are the two "Internet treaties", namely the World Intellectual Property Organization Copyright Treaty[13] (further referred as "WCT") and the World Intellectual Property Organization Performances and Phonograms Treaty[14] (further referred as "WPPT"), which were adopted at Diplomatic Conference in Geneva in December 1996.

In relation to their scope of application they stipulate the obligations for the contracting parties to "provide adequate legal protection and effective legal remedies against the circumvention of effective technological measures that are used by authors in connection with the exercise of their rights under this Treaty or the Berne Convention and that restrict acts, in respect of their works, which are not authorized by the authors concerned or permitted by law."[15]

The contracting parties should furthermore provide an adequate protection from removal of the RMI.

2.2. EUROPEAN UNION – INFOSOC DIRECTIVE

On behalf of the European Community[16] the WCT and WPPT were approved by Council Decision of 16th March 2000 and implemented by the Directive 2001/29/EC of the European Parliament and of the Council of 22nd May 2001 on the harmonization of certain aspects of copyright and related rights in the information society[17] (further referred as "INFOSOC Directive").[18]

The Directive prohibits in Art. 6 circumvention of effective[19] TPM, trading in circumvention tools and in Art. 7 removing of RMI. The lobbying had

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[13] With 68 total contracting parties – http://www.wipo.int/treaties/en/ShowResults.jsp?lang=en&treaty_id=16, Full text of the treaty: http://www.wipo.int/export/sites/www/treaties/en/ip/wct/pdf/trtdocs_wo033.pdf

[14] With 68 total contracting parties. Full text of the treaty: http://www.wipo.int/export/sites/www/treaties/en/ip/wppt/pdf/trtdocs_wo034.pdf

[15] (Art. 10 WCT, respectively Art. 18 WPPT)

[16] Decision of the European Council 2000/278/EC, available at: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32000D0278:EN:NOT

[17] Text of the Directive available at: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32001L0029:EN:HTML

[18] Nevertheless, the TPMs were mentioned on the European level before the INFOSOC Directive in the two following directives:

1. Directive 91/250/EC of 14 May 1991 on the legal protection of computer programs. 1991
2. Directive 98/84/EC of the European Parliament and of the Council of 20 November 1998 on the legal protection of services based on, or consisting of, conditional access

Both of them prohibiting trading in circumvention tools in Art 7 (c), respectively 4.

[19] In order to be deemed effective the DRM has to achieve the protection objective. Interestingly Helsinki District Court held in Case R 07/1004 25 May 2007 that the below discussed DRM system CSS on DVDs is ineffective, because the circumvention tools were widely available online.

its heaviest impact on the Art 6(4) which stipulates the obligation of the Member states to take appropriate measures to ensure that the users may benefit from copyright exceptions. As Wiebe remarks,[20] "the most important exception, the right for private use is only optional", which means that "no private use can be enforced if the national legislators does not provide for it."

Important is also the recital 48 of the Directive, which enacts the principle of proportionality, that is the trading in devices that have commercially significant use other than to circumvent technical protection should not be prohibited. Furthermore, the recital 57 stipulates, that DRM should incorporate privacy safeguards in accordance with Directive 95/46/EC of the European Parliament and of the Council of 24 October 1995 on the protection of individuals with regard to the processing of personal data and the free movement of such data. However, as Bygrave[21] remarks, these could be hardly seen as any binding obligation for the member states. Firstly because of the legal nature of recitals of directives and secondly of the used conditional "should" instead of imperative form "shall".

3. DRM CONTROVERSIES AND MILESTONES

The DRM are heavily criticized by the Consumer Interests groups,[22] the main problem being that the rules of behavior the DRM are enforcing are not covered by positive law. Furthermore, the practices could be also regarded as an anticompetitive behavior.

The coalition of all consumers' organizations in Europe has launched a Campaign on Consumers' Digital Rights in November 2005, issuing a legally non-binding "Declaration of Consumers' Digital Rights".[23] However, the importance of this document could be seen in pinpointing out the most important areas in which the consumers' rights are usually tampered the most. The Declaration stipulates these following rights of consumers in the digital environment:

- Right to choice, knowledge and cultural diversity.

In: Report to the Council, the European Parliament and the Economic and Social Committee on the application of Directive 2001/29/EC on the harmonization of certain aspects of copyright and related rights in the information society, available at: http://ec.europa.eu/internal_market/copyright/docs/copyright-infso/application-report_en.pdf.

[20] Polčák et al., 2007, Introduction to ICT law (Selected issues), Masarykova univerzita, Brno, p. 172.

[21] Bygrave, L. A., 2002, The Technologisation of Copyright: Implications for Privacy and Related Interests, European Intellectual Property Review, vol. 24, no. 2, pp. 51-57.

[22] Most active being: in the USA – Electronic Frontier Foundation (http://www.eff.org/); in Europe – European Digital Rights initiative (http://www.edri.org/) or the

[23] See: Consumers Digital Rights, http://www.beuc.eu/Content/Default.asp?PageID=825 [Accessed 13 January 2009].

- Right to the principle of "technical neutrality" – defend and maintain consumer rights in the digital environment.
- Right to benefit from technological innovations without abusive restrictions.
- Right to interoperability of content and devices.
- Right to the protection of privacy.
- Right not to be criminalized.

In the following analysis we should demonstrate how the users' rights were actually violated. It must be noted that the number of quoted cases is not final. The selection of cases represents only the basic milestones in the development of DRM, in which the fundamental problems connected with usage of DRM were addressed.

3.1. CASE DECSS

One of the first important cases in the development of DRM and struggle for consumers' rights was the case of Jon Lech Johansen. This young Norwegian programmer hacked the DRM system on DVDs called Content Scramble System (CSS), which restricted him from playing his own DVD on a Linux PC and thus violating his right to benefit from technological innovations without abusive restrictions. In 1999 he was charged by the Norwegian Economic Crime Unit for offences against Norwegian Criminal Code Art. 145 (2). His defense, assisted by the Electronic Frontier Foundation, argued that it was legal under Norwegian law to make copies of DVDs for personal use. Consequently, the court ruled[24] there was no evidence that either Johansen or others had used the decryption code (DeCSS) illegally and acquitted him of all charges.

3.2. SONY ROOTKIT SCANDAL

In order to protect the copyrighted CD from being pirated, Sony BMG employed in 2005 the MediaMax and Sony XCP DRM on estimated 15 million music CDs. This software was installed secretly[25] on computers without the user's consent while trying to play the CDs. The software had malicious effect on the Microsoft Windows operating system and opened security holes that allowed viruses to break in. It also caused the computer to slow down. Also the DRM systems were "calling home", i. e. reporting the users' beha-

[24] English translation of the decision is available at: http://w2.eff.org/IP/Video/Johansen_DeCSS_case/20030109_johansen_decision.html. [Accessed 13 January 2009].

[25] The rootkit was discovered by Mark Russinovich on 31st October 2005, see Russinovich, M. 2005, Sony, Rootkits and Digital Rights Management Gone Too Far http://blogs.technet.com/markrussinovich/archive/2005/10/31/sony-rootkits-and-digital-rights-management-gone-too-far.aspx [Accessed 13 January 2009].

vior habits of music consumption to Sony BMG.[26] This conduct could be qualified as a grave violation of the right to the protection of privacy and the right benefit from technological innovations without abusive restrictions.

Consequently[27] three separate class action lawsuits were filed, the users won and under the terms of the settlement,[28] people who purchased XCP-protected CDs were offered either to apply for cash payment of $7.50 plus a free album download, or to download three albums for free.

3.3. CASE iTUNES

Norway's Consumer Ombudsman Bjoern Erik Thon ruled in June 2006[29] that Apple's DRM FairPlay and its refusal to support competing music services on the popular iPod are illegal in the country and that the terms of the EULA are confusing for the customer. The ombudsman gave Apple three options what to do – either to license out FairPlay, or to develop an open standard or to abandon DRM completely. When after almost two years Apple did not meet the requirements of the Ombudsman, he decided to submit this case over to the Higher Norwegian Market Council. The whole case might have ended up in a court trial between Norway and Apple,[30] with the possibility of being a very important decision concerning the right to interoperability of content and devices. However, Apple averted the threat of prosecution on 6th January 2009 by finally fulfilling the demands of the Ombudsman. Starting from the above mentioned date the music purchased over iTunes could be obtained also in unprotected MP3 data format, which rendered the complaint irrelevant.

3.4. STEVE JOBS THOUGHTS ON MUSIC AND THE YEAR OF DRM-FREE DIGITAL MUSIC

Moved by the troubles with DRM in Europe, Steve Jobs, CEO of Apple Inc. published[31] on 6th February 2007, an essay called "Thoughts on Music" in which he criticized DRM heavily. His main ideas could be summed up as

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[26] See: Russinovich, M., 2005, More on Sony: Dangerous Decloaking Patch, EULAs and Phoning Home http://blogs.technet.com/markrussinovich/archive/2005/11/04/more-on-sony-dangerous-decloaking-patch-eulas-and-phoning-home.aspx [Accessed 13 January 2009].

[27] See: https://secureweb.rustconsulting.com/sonybmgcdtechsettlement/Instructions.aspx [Accessed 13 January 2009].

[28] Available at: http://sonysuit.com/classactions/michaelson/settle.pdf [Accessed 13 January 2009].

[29] See: http://www.forbrukerombudet.no/index.gan?id=11032467

[30] Berka, J. 2008, Norwegian Market Council case against Apple progressing, arstechnica, http://arstechnica.com/journals/apple.ars/2008/11/06/norwegian-market-council-case-against-apple-progressing [Accessed 13 January 2009].

[31] Jobs, S. 2007, Thoughts on Music, http://www.apple.com/hotnews/thoughtsonmusic/ [Accessed 13 January 2009].

follows. First, DRM have never been perfect and foolproof, thus discomforting users, who would behave legally anyway. The DRM oppression only encourages people to obtain DRM-free music which comes mainly from illegal sources. And lastly he said that the most common way to get music was via CD, which is DRM-free and easily convertible into compressed music digital formats. This statement was a very lethal blow to DRM in general and the four major recording companies (EMI Music, Warner Music, Sony BMG and Universal Music Group) encouraged by the daring words of Steve Jobs started to offer[32] their catalogues online in unprotected MP3 formats mainly via the biggest MP3 retailer, namely Amazon.com, which was launched on September 25th 2007. Finally also iTunes started to offer music DRM-free as mentioned above in [3.3].

3.5. THE DIGITAL MUSIC SERVICES FIASCO

The fact that the costs of DRM do not measure up to the results, together with the expanding possibilities to acquire DRM free music[33] led the main providers of digital DRM protected music services[34] (MSN Music, Wal-Mart, and Yahoo! Music Store) in early 2008 to the decision to shut down their licensing servers. In order to understand the importance of such controversial decision we have to draft out the basic system functioning of such digital music services.[35] The whole system consists of three components: the content server, the DRM license key servers and the user's client. If the user wants to play the media file, he has to give the adequate consideration first and download the media file from the content server. Than the DRM protected media file sends a request to the DRM license key server to authorize the computer on which it is going to be played and only after all these steps the media file could be rendered. In case that the user would like to play the file on any other than authorized device, the whole process has to be run again. Usually the number of devices, that could be authorized, is limited by the DRM. By the aforementioned decision the providers practically took away the users' possibility to consume their purchased music after a deliberately set date.

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[32] EMI in April 2007, see http://www.theregister.co.uk/2007/02/09/emi_ditching_drm/; Universal Music Group in August 2007, see http://blog.wired.com/music/2007/08/universal-exper-.html; Warner Music Group in December 2007, see: http://www.techcrunch.com/2007/12/27/amazon-adds-warner-music-to-drm-free-roster/; and Sony BMG in January 2008 (see: http://arstechnica.com/news.ars/post/20080110-amazon-rounds-out-drm-free-music-offering-with-sony-bmg.html) [Accessed 13 January 2009].

[33] As mentioned in [3.4].

[34] The DRM issues of the biggest digital music retailer, namely Apple with its iTunes is discussed above.

[35] The most used DRM system on digital music services is the Windows Media DRM http://www.microsoft.com/windows/windowsmedia/forpros/drm/default.mspx [Accessed 13 January 2009].

Concretely, Microsoft, operator of the MSN Music sent out on April 29th 2008 an email to its customers with the following statement:

"As of August 31, 2008, we will no longer be able to support the retrieval of license keys for the songs you purchased from MSN Music or the authorization of additional computers. You will need to obtain a license key for each of your songs downloaded from MSN Music on any new computer, and you must do so before August 31, 2008. If you attempt to transfer your songs to additional computers after August 31, 2008, those songs will not successfully play."[36]

After heavy criticism from the leading Anti-DRM groups[37] Microsoft made a complete turnaround and revoked the shutdown of its licensing servers, stating that: "After careful consideration, Microsoft has decided to continue to support the authorization of new computers and devices and delivery of new license keys for MSN Music customers through at least the end of 2011, after which we will evaluate how much this functionality is still being used and what steps should be taken next to support our customers. This means you will continue to be able to listen to your purchased music and transfer your music to new PCs and devices beyond the previously announced August 31, 2008 date."[38]

Another digital music provider Wal-mart followed practically the same pattern – first it announced the shutdown of the licensing servers and after a while rescinded its decision.

Yahoo! Music took a different approach[39] – they let their servers down for good and offered users either free credit to repurchase their tracks at Yahoo-owned DRM-free store Rhapsody or full refunds.

This behavior of the DRM-entrepreneurs fulfilled the warning predictions[40] of the Anti-DRM advocates and proved how easily the technological and decisive power of the DRM-operators could be misused. Worth mentioning is also the fact that all of the digital music providers advised[41] the

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[36] Cheng, J. 2008, DRM sucks redux: Microsoft to nuke MSN Music DRM keys, http://arstechnica.com/news.ars/post/20080422-drm-sucks-redux-microsoft-to-nuke-msn-music-drm-keys.html [Accessed 13 January 2009].

[37] E.g. EFF – Open Letter to Steven A. Ballmer, Chief Executive Officer of Microsoft, available at: http://www.eff.org/files/MSletter.pdf [Accessed 13 January 2009].

[38] Cheng, J. 2008, Microsoft does 180, will continue to support MSN Music DRM, http://arstechnica.com/news.ars/post/20080618-microsoft-does-180-will-continue-to-support-msn-music-drm.html [Accessed 13 January 2009].

[39] Cheng, J. 2008, Yahoo relents, gives coupons, refunds to music DRM captives http://arstechnica.com/news.ars/post/20080731-yahoo-relents-gives-coupons-refunds-to-music-drm-captives.html [Accessed 13 January 2009].

[40] See e.g.: http://www.eff.org/pages/customer-always-wrong-users-guide-drm-online-music [Accessed 13 January 2009].

[41] Example being Yahoo! – see: http://help.yahoo.com/l/us/yahoo/music/rhapsodymigration/faq.html [Accessed 13 January 2009].

customers to "backup" their purchased songs, by burning the purchased DRM protected songs to CD and then re-ripping it back to compressed format (e.g. MP3), which in fact meant the factual admission of obsolescence of DRM. The question that remains is what will happen to the purchased DRM protected songs when the prolonged maintenance period of the servers is over.

4. DRM – DEFECTIVE BY DESIGN?

The aim of this article is not to argue that the best solution would be to abandon the attempts to control the dissemination of copyrighted digital contents or even the whole idea of copyright. Rather, it should be shown, that the implementation of robust and restrictive DRM as we know it today is not the right way, especially not for the consumers of the digital contents. To put it in another words, the content providers have simply gone too far in their effort to protect their interest.

Therefore, the only conclusion we can draw from the facts mentioned above is that the DRM in their current form were a nice idea, which unfortunately did not work. The contemporary DRM have failed and have proven themselves as defective by design mainly because of the following reasons:[42]

First of all DRM are very ineffective and not foolproof, almost every DRM have been hacked[43] sooner or later, which illustrates the following table:[44]

Content/Medium	*DRM*	*Status*	*Tool*
HD DVD	*AACS*	*Hacked*	*AnyDVD HD*
Blu-ray Disc	*AACS*	*Hacked*	*BackupBluRay*
iTunes Music	*FairPlay*	*Hacked*	*JHymn*
PlaysForSure	*Windows Media DRM*	*Hacked*	*FairUse4WM 1.3*
TiVo	*.tivo files*	*Hacked*	*TiVoDecode Manager*
DVD movies	*CSS*	*Hacked*	*AnyDVD*

[42] In rough outline we could identify with the views of Steve Jobs presented in [3.4].

[43] For a comprehensive overview of the history of hacking DRM, see Anderson, N. 2006, "Hacking Digital Rights Management" http://arstechnica.com/articles/culture/drmhacks.ars [Accessed 13 January 2009].

[44] Adapted from: Ricker, T. 2006, 'DRM: the state of disrepair', Engadget, http://www.engadget.com/2007/02/16/drm-the-state-of-disrepair/ [Accessed 13 January 2009].

Furthermore, copyright is basically working as an ex-post protection mechanism. That is, according to the "traditional" (i.e. non digital) copyright law, the copyright holder has to hold the alleged infringer liable in court, burden of proof and then get remedies. The behavior of the user of work (i.e. the potential infringer) cannot be controlled once the work was set free on market. DRM on the other hand work as an ex-ante determinant of behavior and often fail to comply with the exceptions which vary widely from jurisdiction to jurisdiction. DRM thus tend to override the statutory copyright and are creating a sort of paracopyright with the tendency to favor the copyright holders – this process could be also called as the technologisation of copyright.

Next, DRM are simply a nuisance, as demonstrated on the illustrative cases before, preventing the users to enjoy the main benefits of digitalization, that is the possibility of users to enjoy the copyrighted work, whenever, wherever and in whichever format they want (also called time-shifting, space-shifting and format-shifting). The entertainment industry simply does not bear in mind the simple fact that, in the long run what matters are the paying customers. To illustrate the complete disregard to users we can quote Thomas Hesse, Sony BMG's president of global digital business, who said in an interview about the Sony Rootkit Scandal the following: "Most people don't even know what a rootkit is, so why should they care about it?"[45]

Finally, every DRM are subject to the phenomena called "analog hole". Simply put, the human senses are analog; in order to perceive the digital content it has to be converted into analog.[46] However any analog signal could be converted back into digital form and copied, though with some loss in quality. As the copying technology will progress it could be also argued, that a foolproof DRM are logically not possible.

5. THE FUTURE OF DRM

Unfortunately, to provide a simple and viable answer to the question how the future of DRM will look like is nearly impossible and there is also no "one-size-fits-all" solution. The "arms race" between copyright industries and proactive users who want to benefit fully from their statutory exceptions resembles the fate of the Red Queen in Lewis Carroll's book Through the Looking-Glass, where she describes her situation as follows: "in this

[45] Ulaby, N. 2005, Sony Music CDs Under Fire from Privacy Advocates http://www.npr.org/templates/story/story.php?storyId=4989260 [Accessed 15 May January 2009].

[46] EFF, Analog hole, http://www.eff.org/issues/analog-hole [Accessed 13 January 2009].

place it takes all the running you can do, to keep in the same place."[47] Both groups are developing better technological solutions either to protect the digital content or to crack this protection, but in the end they are both standing in the same place, that is without any viable answer to the digital dilemma.[48]

As seen on the example of digital music, even the copyright industries have already realized the flaws of contemporary DRM and decided to attempt to profit from abundance instead of scarcity.[49] Therefore it remains questionable, whether some sort of DRM should be used in future. If any DRM should be employed at all, it should be multiplatform, user-friendly, based on non-limiting, non-invasive, non-protecting simple use-tracking watermarking or fingerprinting mechanisms.

Another interesting challenge for DRM and copyright in general should be according to Bechtold[50] development of connectivity. Provided that all the content could be streamed instantly and the amount of trafficked data would be irrelevant, the traditional copyright terms like copying would become obsolete – deciding factor would not be the presence of the content on the user's side but merely the link to the central content server.

Concerning the future legal regulation the emphasis must be laid on an attempt to update the current legislation in such way, that it would focus on uncompromising enforcement of consumers' digital rights. Furthermore the tendency should be not to overregulate the whole area of DRM. The rather lengthy national law-making process could pose a threat to the innovation and development of new types of DRM.

The road to a perfect DRM solution that would satisfy everyone involved is still fuzzy and definitely unclear, what we have seen so far were more or less trial and error attempts. When answering the questions what the best DRM solution is, we can quote and join professor Wiebe,[51] who gave perhaps the most pertinent answer: "We shall see, let the market decide".

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[47] Carroll, L. 2008, 'Through the Looking-Glass', http://www.gutenberg.org/files/12/12-h/12-h.htm [Accessed 13 January 2009].

[48] The dichotomy between the basic right of copyright holder to control the use of content and the immanent feature of digitalized content to be copied flawlessly and at no cost. Further see: National Research Council, Committee on Intellectual Property Rights and the Emerging Information Infrastructure, 2000, 'The Digital Dilemma: Intellectual Property in the Information Age', http://www.nap.edu/html/digital_dilemma/exec_summ.html [Accessed 13 January 2009].

[49] Rosenblatt, B. 2008, 2008 Year in Review, Part 1, drmwatch.org, http://www.drmwatch.com/drmtech/article.php/3793156 [Accessed 13 January 2009)

[50] Bechtold, S. 2003, 'The Present and Future of Digital Rights Management' In: Becker Eberhard, Buhse Willms, Günnewig Dirk, Rump Niels. (Eds.) Digital Rights Management: Technological, Economic and Political Aspects. Berlin Heidelberg: Springer-Verlag, 2003, p. 600.

[51] Who answered exactly the same question in the Intellectual property session of the 6th International Conference Cyberspace held in Brno on 29Th November 2008.